(1)	**Type of Address**	
	1 1 0 0 0 0 0 0	**Ported Dialed Number**
(2)	**Odd/Even indicator**	
	0	**Even Number of Address Signals**
	1	*Odd Number of Address Signals*
(3)	**Nature of Address**	
	0000001	*subscriber number*
	0000011	**national (significant) number**
	0000100	*international number*
	1110001	*subscriber number, operator requested*
	1110010	*national number, operator requested*
	1110011	*international number, operator requested*
	1110100	*no number present, operator requested*
	1110101	*no number present, cut-through call to carrier*
	1110110	*950+ call from local switch carrier public station hotel/motel, or non-exchange access end office*
	1110111	*test line code*
(4)	**Test Indicator**	**Test Call Indicator**
	0	**Not a test call (default)**
	1	**Test call**
(5)	**Numbering Plan**	
	000	*unknown (no interpretation)*
	001	**ISDN (Telephony) numbering plan**
	101	*Private Numbering Plan*
(6)	**Address Presentation Restriction**	
	00	**Not Applicable for Type "Ported Dialed Number"**
(7)	**Rsvd**	**Reserved field -- for future use**
(8)	**Address Signal**	
		Coding the same as Called Party Number
(9)	**Filler (if needed)**	

Note: The code points italicized above do not apply for this feature.

Table 2: Ported Number Generic Address Parameter

The format for the GAP follows the standard format specified by Bellcore and ANSI. The Type of Address code point for "ported dialed number" has been defined at T1S1.3 in June 1996 via contribution T1S1.3/96-060401 as the "Ported Number Translation indicator".. The Nature of Address and Numbering Plan for the "ported dialed number" type follow the coding of the Called Party Number parameter. The "test indicator" has not yet been defined by ANSI.
<End of REQ-0440>

<REQ-IL-GR-0450V1>

The ISUP Jurisdiction Information Parameter (Parameter Name Code = 11000100) shall have the following existing standardized format for this feature. Below is the format as defined in American National Standards T1.113-1995.

8	7	6	5	4	3	2	1
2nd Address Signal				1st Address Signal			
4th Address Signal				3rd Address Signal			
6th Address Signal				5th Address Signal			

For LNP, the address signal shall be populated with an NPA-NXX where the NPA digits are specified in the 1st, 2nd, and 3rd address signals and the NXX digits are specified in the 4th, 5th, and 6th address signals. The switch shall support at least one designated NPA-NXX to be signaled in the JIP parameter in the IAM.
<End of REQ-0450>

<REQ-IL-GR-0460V1.03>
The ISUP JIP parameter shall be included in the IAM for all line and private trunk call originations. Unless a separately billed call leg is initiated at the intermediate switch resulting in a change to the billed party, the JIP shall be passed from the incoming IAM to the outgoing IAM without modification at an intermediate switch. If no JIP is received in the incoming IAM, the JIP will be generated at an intermediate switch when the incoming trunk is provisioned with a per-trunk group LRN, otherwise no JIP will be generated.

At an intermediate switch, the JIP shall be passed for cases such as toll-free services or call tandeming. The JIP identifies the switch from which the call originates, and can be recorded to identify that switch.

<End of REQ-0460>

<REQ-IL-GR-0462V1.03>
The ISUP JIP parameter shall be generated or replaced with the JIP of the switch which due to feature interactions initiates a separately billed call leg. In particular, call forwarding, call redirection, and call deflection should result in a JIP generated by this switch in accordance with the procedures for a new origination. AIN services that result in a separately billed call leg should generate a JIP or override an incoming JIP following the procedures for a new origination.

In either case (e.g. switch based supplementary service or AIN feature interactions), the JIP signaled will be that of the switch at which the billing number was modified (i.e. the forwarding switch or AIN SSP).
<End of REQ-0462>

<REQ-IL-GR-0470V1>
If the LRN is replaced with a new routing number due to feature invocation (i.e., AIN, Tollfree, etc.) without a subsequent LNP query, the IAM shall not include the GAP with type "ported number" and the FCI's Translated Called Number field shall be set to "Number not Translated." In addition, the call shall be allowed to encounter a subsequent LNP trigger.

The LRN shall have an associated Translated Called Number Indicator and "ported number" GAP for signaling to another switch. If the LRN is replaced by another address (i.e., due to feature invocation), the "ported number" GAP and Translated Called Number Indicator shall be modified based on the new address.

If the LRN is replaced, the GAP should be removed and the Translated Called Number Indicator defaulted to "Number not Translated" unless the new address requires these parameters (i.e., new ported number).

Note: Provisioning errors could result in looping of calls similar to loops that can occur today in the network. Existing mechanisms (i.e., ISUP Hop Counter, Call Forwarding Redirection Information) can be employed to resolve these errors.
<End of REQ-0470>

<REQ-IL-GR-0480V1>
An originating or intermediate switch shall support a per trunk group option for ISUP trunks for signaling the ported number instead of the LRN as the called party. The switch will route through the switch using the LRN (since the LRN is not it's own LRN) when the LRN is either received from another switch or via an LNP query. When the SS7 outgoing trunk is selected, the switch will use the GAP information, after proper digit editing, to formulate the Called Party Number in the IAM. The FCI shall be set to "Number not translated" and the GAP shall not be included.

This requirement allows the service provider to send the dialed number and must be coordinated with the connected switch. This flexibility increases the chances of trunk looping since the dialed number could route back to the sending switch.
<End of REQ-0480>

<REQ-IL-GR-0490V1>
When the call is routed out of the originating or intermediate switch after an LNP processing with an LRN and the trunk selected uses inband signaling (i.e., MF), the called party number sent inband to the other switch shall be the dialed number (after normal prefix/deletion) and not the LRN. Note that the call was routed via the LRN from LNP query and not via the dialed number. When the LRN returned is the querying switch's LRN, the response shall be treated as an Analyze_Route with the dialed number.

The remaining signaling procedures are not modified. This requirement allows the service provider the ability to continue the call's progress for interworking situations.
<End of REQ-0490>

<REQ-IL-GR-0500V1>
A new Release (REL) Message cause value {ANSI standard, normal event, cause code 0011010 (26) - "Misrouted call to a ported number"} shall be used to clear a call when an LRN was received and the address digits in the GAP specify an unallocated number. The call can be cleared using this new cause code with the existing release procedures.

The new cause code 26 has been defined at T1S1.3 in June 1996 via contribution T1S1.3/96-060401.
<End of REQ-0500>

4.2.2.2 Switch without the Ported Subscriber
This section describes the signaling from an originating switch that is not serving the ported subscriber. The table below gives a summary of the signaling from the originating switch.

LNP Trigger Response	Basis for Routing	Routing Tables	Outgoing Signaling ("Signal Ported Number" TG option not specified)			
			Type	FCI	GAP	CdPN
LRN	LRN	LNP	ISUP	1	DN	LRN
DN	DN	LNP	ISUP	1	No GAP	DN
No Trigger	DN	Normal	ISUP	0	No GAP	DN
LRN	LRN	LNP	MF	N/A	N/A	DN
DN	DN	LNP	MF	N/A	N/A	DN
No Trigger	DN	Normal	MF	N/A	N/A	DN
SCP Failure	DN	LNP	ISUP	0	No GAP	DN
SCP Failure	DN	LNP	MF	N/A	N/A	DN

N/A = Not applicable
Note: A response with the querying switch's LRN will be treated as a Dialed Number response.

Table 3: "Originating Switch Signaling"

<REQ-IL-GR-0510V1>
For Interoffice ISUP calls, when an LNP query is not made at an originating switch, the "Translated Called Number Indicator (bit M)" in the FCI parameter in the IAM shall be set to "Number not translated (0)".

Bit M of the Forward Call Indicators parameter is always set to "0" for non-LNP capable switches according to existing Bellcore and ANSI specifications.
<End of REQ-0510>

<REQ-IL-GR-0520V1>
When the call is routed out of the originating switch after an LNP trigger processing with another switch's LRN and the trunk selected uses ISUP with the "Signal Ported Number" trunk group option not specified, the Initial Address Message shall be sent with the following additional requirements:

I. **The Called Party Number Parameter shall be populated with the LRN address and coded following existing ISUP requirements.**

II. **The GAP coded as follows:**

- **Type of Address: Ported Number (11000000).**
- **Odd/Even: Set for even number of address digits (0). For LNP, ten address digits are included so this field has an even number of address digits.**
- **Nature of Address: National Number (0000011).**
- **Numbering Plan: ISDN (telephony) Numbering Plan (001).**
- **Presentation Restriction indicator: Not Applicable (00)**
- **Address Signals: The 10 digit ported number (dialed, derived, or signaled) shall be stored in the Address Signals in the GAP. The switch shall convert the dialed number into a 10-digit number for inclusion in the GAP by prepending the NPA or expanding the extension. The prefix (i.e., 1+) or access code (i.e., 101XXXX) shall not be included in the GAP. The NPA is**

derived based on the dialing plan for the originating subscriber (i.e., currently when a subscriber dials a 7 digit number, the NPA must be assumed). The derivation of the NPA must account for the case where 7 digit dialing can cross NPA boundaries (e.g., protected NXX codes). For this case, the NXXs are not duplicated across the NPAs and therefore the NPA is assumed for the particular NXX.

III. The "Translated Called Number Indicator" in the Forward Call Indicators of the IAM shall be coded as "Number Translated."

The remaining signaling parameters (CgPN, CHG, etc.) in the IAM shall follow the existing ISUP requirements. The type of address for "ported number" has been defined at T1S1.3 in June 1996 via contribution T1S1.3/96-060401.
<End of REQ-0520>

<REQ-IL-GR-0530V1>
When the call is routed out of the originating switch after an LNP trigger processing with a Dialed Number response and the trunk selected uses ISUP, the following modifications to the Initial Address Message shall be made:

I. The Called Party Number Parameter shall be coded using existing switch procedures with the dialed number.

II. The IAM shall not include the "ported dialed number" GAP.

III. The "Translated Called Number Indicator" in the Forward Call Indicators of the IAM shall be coded as "Number Translated."

For this case, the "Signal Ported Number" is not specified for this trunk group. See tag <480> in Section 4.2.2 for requirements on this option.

The remaining signaling parameters (CgPN, CHG, etc.) in the IAM shall follow the existing ISUP requirements.
<End of REQ-0530>

<REQ-IL-GR-0540V1>
When the call is routed out of the originating switch after an LNP trigger processing with a Dialed Number response and the trunk selected uses inband signaling, the called party signaled shall be the dialed number.

The remaining signaling procedures are not modified. This requirement allows the service provider the ability to continue the call's progress for interworking situations.
<End of REQ-0540>

4.2.2.3 Intermediate Switch
At an intermediate SS7 to SS7 switch existing ISUP requirements specify that a switch should pass the optional GAP parameters used by local number portability. In addition, the switch should pass unknown fields within an existing parameter (i.e., FCI). These existing Bellcore and T1S1 requirements enable this feature to be deployed without modification to all the switching systems in the network.

This section describes the requirements at an intermediate switch where an LNP query may or may not be done. This section does not include the case where the switch is the Recipient switch for the dialed number (e.g., line is served by the switch). Below is a table outlining the signaling at an intermediate switch.

Incoming Signaling				LNP Trigger Response	Basis for Routing	Routing Tables	Outgoing Signaling ("Signal Ported Number" TG option not specified)			
Type	FCI	GAP	CdPN				Type	FCI	GAP	CdPN
MF	N/A	N/A	N/A	LRN	LRN	LNP	ISUP	1	DN	LRN
MF	N/A	N/A	N/A	CdPN	CdPN	LNP	ISUP	1	No GAP	CdPN
MF	N/A	N/A	N/A	No Trigger	CdPN	Normal	ISUP	0	No GAP	CdPN
MF	N/A	N/A	N/A	LRN	LRN	LNP	MF	N/A	N/A	CdPN
MF	N/A	N/A	N/A	CdPN	CdPN	LNP	MF	N/A	N/A	CdPN
MF	N/A	N/A	N/A	No Trigger	CdPN	Normal	MF	N/A	N/A	CdPN
ISUP	0	*	*	LRN	LRN	LNP	ISUP	1	CdPN	LRN
ISUP	0	*	*	CdPN	CdPN	LNP	ISUP	1	No GAP	CdPN
ISUP	0	*	*	No Trigger	CdPN	Normal	ISUP	Pass	Pass	CdPN
ISUP	0	*	*	LRN	LRN	LNP	MF	N/A	N/A	CdPN
ISUP	0	*	*	CdPN	CdPN	LNP	MF	N/A	N/A	CdPN
ISUP	0	*	*	No Trigger	CdPN	Normal	MF	N/A	N/A	CdPN
ISUP	1	DN	Not LRN	N/A	LRN	LNP	MF	N/A	N/A	DN from GAP
ISUP	1	N/A	Not LRN	N/A	CdPN	LNP	MF	N/A	N/A	CdPN
ISUP	1	*	Not LRN	N/A	CdPN	LNP	ISUP	Pass	Pass	CdPN
ISUP	0	N/A	*	SCP Failure	CdPN	LNP	ISUP	0	No GAP	CdPN
MF	N/A	N/A	*	SCP Failure	CdPN	LNP	ISUP	0	No GAP	CdPN

* = Don't Care N/A = Not applicable Not LRN = Not switch's LRN
CdPN=Dialed Number unless changed via a feature.

Table 4: Intermediate Switch Signaling

<REQ-IL-GR-0550V1>
When an IAM is received at a switch via ISUP and no LNP query is made, the ported number GAP and/or FCI's Translated Dialed Number Indicator in the incoming IAM shall be sent in the outgoing IAM when ISUP signaling is used with the "Signal Ported Number" trunk group option not specified. If the called party is modified due to feature invocation, the FCI's Translated Dialed Number Indicator will be set to "number not translated" and the ported GAP removed, if applicable.

The Forward Call Indicator Translated Called Number Indicator, Ported Number GAP, and Called Party Number parameters are interrelated. If the contents of one parameter is changed, the remaining parameters must be modified to reflect this change.

<End of REQ-0550>

<REQ-IL-GR-0560V1>
When an intermediate switch does not send an LNP query, the outgoing IAM shall have the following requirements:

1. **For an incoming ISUP trunk, the "Translated Called Number Indicator" in the Forward Call Indicators (FCI) parameter and the "ported number" GAP shall be passed as received from the incoming IAM.**

2. **For an inband incoming trunk, the "Translated Called Number Indicator" in the FCI parameter in the outgoing IAM shall be defaulted to "number not translated." The "ported number" GAP shall not be included in the outgoing IAM.**

<End of REQ-0560>

<REQ-IL-GR-0570V1>
For an intermediate switch when;

- **the incoming signaling is ISUP,**
- **the FCI received is set to "translated number,"**
- **the called party number does not contain the switch's LRN,**
- **the "ported number" GAP is received in the IAM, and**
- **the outgoing signaling is MF,**

the switch shall route on the LRN using the LNP Routing Tables but shall signal, using inband signaling, the "ported number" GAP address digits to the egress switch.
<End of REQ-0570>

<REQ-IL-GR-0580V1>
When an intermediate switch receives an LNP response with another switch's LRN, the LRN shall be translated in the LNP Routing Tables to select an outgoing route. If the route is SS7, the outgoing Initial Address Message shall be sent with the following additional requirements:

I. **The Called Party Number Parameter shall be populated with the LRN and coded following existing ISUP requirements.**

II. **The GAP coded as follows:**

   - **Type of Address: Ported Number (11000000).**

   - **Odd/Even: Set for even number of address digits (0). For LNP, ten address digits are included so this field has an even number of address digits.**

   - **Nature of Address: National Number (0000011).**

   - **Numbering Plan: ISDN (telephony) Numbering Plan (001).**

   - **Presentation Restriction indicator: Not Applicable (00)**

   - **Address Signals: The 10 digit ported number (dialed, derived, or signaled) shall be stored in the Address Signals in the GAP. The switch shall convert the dialed number into a 10-digit number for inclusion in the GAP by prepending the NPA or expanding the extension. The prefix (i.e., 1+) or access code (i.e., 101XXXX) shall not be included in the GAP. The NPA is**

derived based on the dialing plan for the originating subscriber (i.e., currently when a subscriber dials a 7 digit number, the NPA must be assumed).

III. The "Translated Called Number Indicator" in the Forward Call Indicators of the IAM shall be coded as "Number Translated."

For this case, the "Signal Ported Number" is not specified for this trunk group. See tag <480> in 4.2.2. for requirements on this option.

The remaining signaling parameters (CgPN, CHG, etc.) in the IAM shall follow the existing ISUP requirements. These requirements apply when the incoming trunk signaling is ISUP or MF.
<End of REQ-0580>

<REQ-IL-GR-0590V1>
When an intermediate switch that encounters an LNP trigger receives a response with an LRN, the LRN shall be used to select an outgoing route using the LNP routing tables. If the route is to a inband facility, the dialed number shall be outpulsed, after normal digit prefix/delete, as the called number on the outgoing trunk. The LRN shall not be signaled to the egress switch.
<End of REQ-0590>

<REQ-IL-GR-0600V1>
When an intermediate switch receives an LNP response with the dialed DN or switch's LRN, the dialed DN shall be translated in the LNP Routing Tables to select the route. If the route is SS7 with the "Signal Ported Number" trunk group option not specified, the outgoing Initial Address Message shall be sent with the following additional requirements:

I. The Called Party Number Parameter shall be populated with the Dialed Number and coded following existing ISUP requirements.

II. The "ported number" GAP shall not be included in the outgoing IAM.

III. The "Translated Called Number Indicator" in the Forward Call Indicators of the IAM shall be coded as "Number Translated."

The remaining signaling parameters (CgPN, CHG, etc.) in the IAM shall follow the existing ISUP requirements. These requirements apply when the incoming trunk signaling is ISUP or MF.
<End of REQ-0600>

<REQ-IL-GR-0610V1>
When an intermediate switch receives an LNP response containing the dialed DN or the switch's LRN in the CalledPartyID parameter, the dialed DN shall be translated in the LNP Routing Tables to select the outgoing route. If the outgoing route is inband, the dialed number shall be outpulsed, after normal digit prefix/delete, as the called number on the outgoing trunk.
<End of REQ-0610>

<REQ-IL-GR-0620V1>
When an intermediate switch receives an IAM with the FCI set to "Translated Number" and the CdPN does not contain an LRN for this switch, the CdPN shall be analyzed using the LNP routing tables.
<End of REQ-0620>

<REQ-IL-GR-0622V1>

If the GAP is used for routing but is formatted incorrectly, the call should be aborted using standard release procedures. If a release is sent, the REL shall be coded with a location of "Local Local Network" and a cause of "Invalid number format (address incomplete) (28)."

The GAP may not be available or coded incorrectly due to protocol/application errors on another switching system in the network. If no GAP is available, the destination subscriber for the call can not be determined.
<End of REQ-0622>

4.2.2.4 Switch Serving the Ported Number

Incoming Signaling				LNP Trigger Response	Basis for Routing	Routing Tables
Type	FCI	GAP	CdPN			
MF	N/A	N/A	CdPN	CdPN	CdPN	LNP
MF/Line	N/A	N/A	CdPN	No Trigger	CdPN	Normal
ISUP	1	None	CdPN	N/A	CdPN	Normal
ISUP	1	DN	LRN	N/A	DN from GAP	Normal
ISUP	0	N/A	CdPN	Switch's LRN	CdPN	LNP

N/A = Not applicable
CdPN=Dialed Number unless changed via a feature.

Table 5: Recipient Switch Signaling

A switch is the recipient switch when the called number received at the switch contains the LRN for this switch. The switch has a list of unique North American Numbering Plan numbers that are defined as LRNs for this switch. When a call is incoming to the switch over an ISUP trunk and the FCI is set to "translated number," the switch will check if the called number is an LRN. If so, the "ported number" GAP will replace the LRN as the called number. This new called number will then be used to route to the subscriber. Below is a table outlining the signaling for the Recipient switch.

By definition, an LRN for the switch is identified when all the following apply:

- The FCI Translated Called Number indicator indicates a translated number.
- The "ported number" GAP is present in the IAM.
- The Called Party Number contains a Directory Number that is provisioned as an LRN for this switch. The LRN can be identified from the NPA-NXX , if present, or from the Implied NPA-NXX from the Called Party Number parameter.

<REQ-IL-GR-0630V1>
When a Recipient switch receives the IAM with the FCI indicating a translated number and "ported number" GAP, the called party number shall be analyzed to determine if the number is the switch's LRN. If so, the switch shall interpret the GAP with a type of ported number delivered in the IAM for LNP. The address signals in the GAP shall be analyzed via normal digit translations to yield the port (line or trunk) for the call.

If normal digit analysis routes the call out of the office, the IAM shall be formatted using existing ISUP procedures except the FCI shall indicate a translated number. No GAP shall be included in the IAM.
<End of REQ-0630>

<REQ-IL-GR-0640V1>
If the GAP is used for routing but is formatted incorrectly, the call should be aborted using standard release procedures. If a release is sent, the REL shall be coded with a location of "Local Local Network" and a cause of "Invalid number format (address incomplete) (28)."

The GAP may not be available or coded incorrectly due to protocol/application errors on another switching system in the network. If no GAP is available, the destination subscriber for the call can not be determined.
<End of REQ-0640>

<REQ-IL-GR-0650V1>
While translating the "ported number" GAP as the new called number, the switch could encounter an LNP trigger for the called number. For this case, the LNP query shall not be made and the call routed using existing routing procedures.

When the LRN is replaced with the address information from the GAP, the new called number is retranslated and the routing should proceed to the terminating port (line or trunk) using existing routing in the switch. The FCI will be set to "number translated" and no "ported GAP" will sent in the IAM.
<End of REQ-0650>

<REQ-IL-GR-0660V1>
If digit analysis of the called number from the "ported number" GAP yields a terminating party with a call redirection (e.g., forwarding feature AIN redirection, tollfree redirection), the call redirection shall be allowed using existing switch procedures. Call processing shall proceed as though the called number was not a portable number (i.e., no "ported number" GAP, FCI set to "number not translated").

For example, the "ported" GAP could translate to a terminating party with call forwarding. The Call Forwarding parameters in the IAM (i.e., Original Called Number or Redirecting Number) shall be populated with the "ported number" information which is the called number. At this point in the call, the LRN is no longer needed.
<End of REQ-0660>

Existing ISUP procedures are used to define the population rules for the call forwarding parameters (i.e., Redirection Information, Original Called Party Number, and Redirecting Number). The requirements below are provided to clarify the signaling relating to these parameters. See the Feature Interactions section (Section 4.4.1, Page 45) for more information.

<REQ-IL-GR-0670V1>
If digit analysis of the ported number from the "ported" GAP yields a terminating party with call forwarding, the Call Forwarding parameters in the IAM (i.e., Original Called Number or Redirecting Number) should be populated with the "ported number" information and not the LRN.
<End of REQ-0670>

<REQ-IL-GR-0680V1>
If digit analysis of the ported number from the GAP yields a terminating party with a call forwarding feature active and the "forward to" number is a ported number, the call shall be allowed to forward to the ported number. The processing of the "forward to" number will result in an LNP query and response. The response from the LNP query shall be processed like the initial LNP query.

The IAM shall include the GAP with type "ported number" for the "forward to" number and the FCI's Translated Called Number field shall be set to "Number Translated." The Call Forwarding parameters in the IAM (i.e., Original Called Number or Redirecting Number) should be populated with the "ported number" information from the base number (forwarding station) and not the LRN.

Once the "ported number" GAP replaces the LRN, digit analysis and subsequent call processing for the ported number shall receive the normal LNP processing.
<End of REQ-0680>

4.2.3 Other Intra-Network Interfaces

As specified in the AIN Release 0.1 requirements, for LNP triggers, the SSP should send the SCP the same error messages as for existing trigger query failures.

4.3 Hardware Interfaces Requirements

No unique hardware elements are needed.

4.4 Interactions and Transparencies with Other Features

4.4.1 FEATURE INTERACTIONS

The critical assumption with respect to feature interactions is that the switch-based feature interaction with the LNP triggers will be identical to the feature interactions with the current triggers except for features defined in this section.

<REQ-IL-GR-0690V1>
Unless noted, the interactions between the LNP trigger operation and switch-based features including other AIN capabilities will be identical to the feature interactions specified for such triggers in appropriate existing Bellcore Generic Requirements.
<End of REQ-0690>

<REQ-IL-GR-0695V1.02>
For calls to non-ported subscribers, the services and features shall continue to function as though the LNP trigger does not exist.
<End of REQ-0695>

4.4.1.1 Advanced Service Platform (AIN) Services Interactions

With respect to Termination_Notification, it is assumed that the SCP-based service operation will not use the Termination_Notification capability.

With respect to the AIN Send_To_Resource operation (including Send_To_Resource external), it is assumed that the SCP-based service operation will not initiate a Send_To_Resource session to collect additional information from the user or play announcements to the user.

4.4.1.1.1 AIN Next Event List Interactions

<REQ-IL-GR-0700V1>
While a persistent or extended transaction is open, a second trigger can be encountered[3]. For the resulting transaction only one response is allowed, and the second transaction should not open a persistent transaction or use the AIN Send_To_Resource operation. If an LNP trigger results in a persistent transaction or a Send_To_Resource operation, the switch shall treat the response as a fatal error in accordance with existing AIN 0.1 procedures.
<End of REQ-0700>

4.4.1.1.2 AIN Serial Triggering Interactions

[3] This processing is an extension to the Bellcore AIN requirements where there is a restriction that only one query transaction can be open on a given call at a time.

The AIN LNP trigger will interwork with the AIN serial triggering operation the same as existing AIN PODP triggers.

With respect to the serial triggering counter, the LNP query will result in the counter being incremented. The SSP will check the serial triggering count prior to the LNP query and, if the serial triggering limit is exceeded, the SSP will not launch the query.

The LNP capability will conditionally preserve "Ported Number" GAP across subsequent triggers based on the called number replacement. If the called number is not replaced by a subsequent trigger, the GAP and FCI information will be maintained.

<REQ-IL-GR-0710V1>
The "Ported Number" GAP parameter and FCI status will be preserved across subsequent serial triggers only if the Called Party ID is not changed as a result of the query.

If a non-LNP query is encountered, and the received Called Party ID is changed, any existing "ported number" GAP should be cleared and the LNP FCI value shall be cleared.

If an SCP response includes an alternate carrier parameter (unexpected for an LNP query), the "ported number" GAP and Translated Called Number indicator in the FCI parameter are not sent to the carrier since there are no requirements for sending these parameters via Feature Group D signaling.

An LNP query should not be launched if the FCI is set and a second LNP trigger is encountered.
<End of REQ-0710>

4.4.1.1.3 AIN Trigger Precedence
Existing Public Office Dialing Plan triggers definitions allow for triggers to share the same (but not identical) digits, or have overlapping digit patterns. The existing PODP or IN triggers will have precedence over LNP triggers.

<REQ-IL-GR-0720V1.04>
When the triggering pattern of the LNP trigger called/dialed number matches an AIN trigger, existing PODP or IN triggers will take precedence. And,

1. **If the AIN trigger returns a Continue response, the call will encounter the LNP trigger following the first trigger. An LNP query may or may not be sent as per the conditional detection algorithm.**

2. **If the AIN trigger returns an Analyze_Route response (whether the *CalledPartyID* is changed or not), the SSP will perform digit analysis again and may or may not encounter an LNP trigger.**

3. **If the AIN response message returns the same dialed DN as the *CalledPartyID*, then the LNP trigger will be encountered.**

4. **These interactions must also hold if the trigger is an AIN Release 0 Trigger or 800 service trigger, in addition to the AIN Release 0.1 triggers.**

<End of REQ-0720>

4.4.1.2 Attendant Features
No change to the Attendant features with respect to the LNP trigger interactions - interactions will follow the current trigger interactions.

4.4.1.3 Automatic Callback (AC)

- Generally Available AC
- Return Call AMA
- Subscription AC
- Two-Level Activation of Automatic Callback and Customer Originated Trace

With AIN 0.1, calls originated by the Automatic Callback feature cannot successfully encounter a PODP trigger on the same switch.

With the LNP trigger assignment, AC needs to continue to work when the number being called back is a ported number. When the number being called back is determined through digit analysis to be located on another switch and no LNP Trigger is encountered, this results in a standard AC Initial Query TCAP message being launched. The TCAP message is encapsulated in the data field of a Signaling Connection Control Part (SCCP) message. This SCCP message is formatted to request Global Title Translation (GTT) routing. This SCCP message will be routed based on the Translation Type (appropriate for CLASS) and the NPA-NXX-XXXX of the called DN (i.e., the target DN). Modifications to the STP/SCP as described in Sections 3.3 and 3.4 will permit the message to be routed to the correct destination switch (i.e., where the actual target DN is located) whether or not the number is a ported number. Since the Response TCAP message from the destination switch contains its Destination Point Code, all subsequent AC messages can be routed directly to the appropriate target switch (according to existing procedures).

AC needs to continue to work as expected when the AC number is a ported number that results in an LNP trigger at the switch where the AC user is located.

<REQ-IL-GR-0730V1>
If the AC number is located on the same switch as the AC user, an AC activation attempt shall be treated as an intraswitch AC activation attempt and shall not result in any AC TCAP messages being sent. This shall be the case whether or not the number has an LNP trigger. The result of this AC activation attempt shall be unaffected by the presence of an LNP trigger.
<End of REQ-0730>

<REQ-IL-GR-0740V1>
If the AC number is not located on the same switch as the AC user and is an LNP trigger, an AC activation attempt shall be treated as an interswitch AC activation attempt.

This is expected to result in the standard TCAP Initial Query message for AC.
<End of REQ-0740>

<REQ-IL-GR-0750V1>
If the non-ported target DN of an interswitch AC activation request is ported to another switch (not the same switch as the one on which the AC user is located) and the AC user again requests an AC activation after receipt of a call from the now ported DN, there will be no change (before and after porting) needed in the SCCP routing data used for the AC Initial Query TCAP message. This shall be the case whether or not the AC number is an LNP Trigger.

This assumes that the DN is not ported to the same switch as where the AC user is located in which case there would be no TCAP messaging.
<End of REQ-0750>

4.4.1.4 Automatic Recall (AR)
The Automatic Recall feature needs to work when the number being recalled is a ported number. The discussion in the previous section on AC also applies to AR. For the requirements in this section, assume that the AR activation attempts are made under conditions where AR activation would result in checking the status (i.e., TCAP Query for interswitch case) of the party whose DN is in the Outgoing Line History

Block (OLHB). This means that the user is authorized to make an AR request and the necessary switch and network resources are available.

<REQ-IL-GR-0760V1>
If the AR number is located on the same switch as the AR user, an AR activation attempt shall be treated as an intraswitch AR activation attempt and shall not result in any AR TCAP messages being sent. This shall be the case whether or not the number is an LNP Trigger.
<End of REQ-0760>

<REQ-IL-GR-0770V1>
If the AR is an LNP trigger and not located on the same switch as the AR user, an AR activation attempt shall be treated as an interswitch AR activation attempt.

This shall result in the standard TCAP Initial Query message for AR.
<End of REQ-0770>

<REQ-IL-GR-0780V1>
If the non-ported target DN of an interswitch AR activation request is ported to another switch (not the same switch as the one on which the AR user is located) and the AR user again requests an AR activation to the now ported DN, there will be no change (before and after porting) needed in the SCCP routing data used for the AR Initial Query TCAP message. This shall be the case whether or not the AR number is an LNP Trigger.

This assumes that the DN is not ported to the same switch as where the AR user is located in which case there would be no TCAP messaging.
<End of REQ-0780>

4.4.1.5 Call Forwarding
No new requirements. A Call Forwarded call can encounter an LNP trigger and route the call to the portable subscriber.

<REQ-IL-GR-0790V1>
If call forwarding activation encounters an LNP trigger, the interswitch treatment for processing the feature request shall apply (e.g., courtesy call).
<End of REQ-0790>

<REQ-IL-GR-0800V1>
The "Ported Number" GAP and FCI values should not be preserved across any types of switch-based call forwarding operations. Whenever the Called Party ID is changed, any existing "Ported Number" GAP and Translated Called Number indicator in the FCI parameter shall be cleared.
<End of REQ-0800>

4.4.1.6 Emergency (911) Services
B911 ringback to an LNP number will operate successfully whenever the B911 ringback is over a dedicated trunk from the PSAP switch and the originating switch.

PSAP numbers should not be ported.

4.4.1.7 Inter-Switch Voice Messaging (ISVM)
The Interswitch Voice Messaging feature needs be able to continue to change the status of an ISVM user's Message Wait Indicator (MWI) for the case where the user's DN is a ported number. When the number with the Message Wait Indicator is determined, through digit analysis, to be located on a different switch from the switch to which the Messaging System is connected, this will result in a Message Wait Indicator

TCAP message being launched. The TCAP message is encapsulated in the data field of a Signaling Connection Control Part (SCCP) message.

This SCCP message is formatted to request Global Title Translation (GTT) routing. This SCCP message will be routed based on the Translation Type (appropriate for ISVM) and the NPA-NXX-XXXX of the Message Wait Indicator DN. Modifications to the STP/SCP as described in Sections 3.3 and 3.4 will permit the message to be routed to the correct destination switch (i.e., where the actual target DN is located) whether or not the number is a ported number. No ISVM switch development is required to support this routing.

ISVM needs to continue to work as expected when the ISVM Message Wait Indicator is a number that results in an LNP Trigger.

<REQ-IL-GR-0810V1>
A Message Wait Indicator status change for a message service user who is located on the same switch as the Message Service must be treated as an intraswitch Message Wait Indicator status change, and not result in a TCAP Message Wait Indicator message for ISVM, whether or not the message service user's DN is an LNP trigger.
<End of REQ-0810>

<REQ-IL-GR-0820V1>
A Message Wait Indicator status change for a message service user who is not located on the same switch as the Message Service, and whose DN is an LNP trigger must be treated as an interswitch TCAP Message Wait Indicator status change.

This is expected to result in the standard TCAP Message Wait Indicator message for ISVM.
<End of REQ-0820>

<REQ-IL-GR-0830V1>
For a Message Wait Indicator status change request towards a non-ported message service user's DN (interswitch), if the message service user's DN is ported to another switch (not the same switch as the one on which the Message Service is located) and the message service again requests a Message Wait Indicator status change for the same message service user, there will be no change (from the non-ported case) needed in the SCCP routing data of the Message Wait Indicator TCAP message. This is the case whether or not the user's DN is an LNP trigger.

This assumes that the DN is not ported to the same switch as where the Message Service is located in which case there would be no Message Wait Indicator TCAP message sent.
<End of REQ-0830>

4.4.1.8 Multiway Calling/Flexible Calling Modular Feature (CSV)
For Three-Way Calling, Six-Way Conference Calling, Add-on/Consultation Hold Incoming Only, and Attendant Conference, a ported subscriber can initiate, add to or drop from the conference call using existing conferencing procedures. Call transfer attempts using normal routing may encounter AIN triggers and LNP triggers.

4.4.1.9 ISDN
No changes to ISDN access or services. Directory Numbers used for packet service can not be ported. There are no new requirements imposed on the Primary Rate Interface (PRI) by this feature.

4.4.1.10 OA&M Features

<REQ-IL-GR-0840V1>
The switch shall be able to verify or trace a route for a number that corresponds to an LNP trigger.

<End of REQ-0840>

4.4.1.11 Screen List Editing (SLE)

The Screen List Editing feature needs to work when the number being added to the list is a ported number. The discussion in the previous section on Automatic Recall also applies to SLE. For the requirements in this section, assume that the SLE attempts are made under conditions that result in checking the status (i.e., TCAP Query for interswitch case) of the party whose DN is being added to the screening list. This means that the user is authorized to make an SLE request and the necessary switch and network resources are available.

A Screen List Editing (SLE) verification of an entry by a user of an SLE feature (e.g., Selective Call Rejection, Selective Call Forwarding) is expected to continue to function as expected whether or not the entry is a ported number or an LNP trigger. An SLE verification of a number which is on the same switch as the SLE user does not result in an SLE TCAP Query, and an SLE verification of a number which is not on the same switch as the SLE user does result in an SLE TCAP Query.

<REQ-IL-GR-0850V1>
An SLE verification of a DN which is located on the same switch as the SLE feature user shall be treated as an intraswitch SLE entry verification and shall not result in a TCAP SLE Query message being sent. This shall be the case whether or not the number is an LNP trigger.
<End of REQ-0850>

<REQ-IL-GR-0860V1>
An SLE verification of a DN which is an LNP trigger and which is not located on the same switch as the SLE feature user shall be treated as an interswitch SLE entry verification.

This is expected to result in the standard TCAP SLE Query message.
<End of REQ-0860>

<REQ-IL-GR-0870V1>
For an SLE entry request towards a non-ported target DN (interswitch) which results in a TCAP SLE Query message, if the target DN is subsequently ported to another switch (not the same switch as the one on which the SLE feature user is located) and the SLE feature user again requests an SLE entry of the now ported DN, there will be no change (from the non-ported case) needed in the SCCP routing data used for the SLE TCAP Query message.

This assumes that the DN is not ported to the same switch as where the SLE feature user is located in which case there would be no TCAP message sent. It also assumes that the SLE feature user has removed the initial entry so that he/she is not trying to add an already existing entry.
<End of REQ-0870>

4.5 Operations, Administration and Provisioning Requirements

4.5.1 Service Changes

LNP trigger assignment can be viewed as an incremental assignment to the existing AIN triggers.

The LNP trigger definition and assignment can occur wherever the current PODP trigger can be provisioned.

4.5.1.1 Switch Provisioning Modifications - LNP

<REQ-IL-GR-0880V1>

The Switch Provisioning shall support LNP triggers at an NPA-NXX basis (at a minimum) as supported for the AIN triggers or IN triggers. The LNP trigger designation is in addition to the current AIN or IN trigger assignment for a given dialing pattern. The LNP trigger can coexist with AIN or IN triggers as a separate trigger and the LNP trigger will be encountered "last" in the case where both triggers are assigned on the same digit pattern.
<End of REQ-0880>

<OPT-IL-GR-0890V1.04>
The Switch provision shall support, on a subscriber basis, an option for allowing the LNP query to be performed if the line is being served by the switch. When provisioned, the line or group of lines shall receive special LNP processing to override the check for LNP triggers when the called number is being served by the switch. With this option, the switch will provide all the LNP query escape criteria (see <REQ-IL-GR-0140V1>) except the check for whether the subscriber is on the switch or not. Specifically, calls to these portable subscribers would result in an LNP query unless the call is destined to an IXC, destined to an operator, or the FCI is set to "translated number".

This option could be configured against the line when the line is available. If the line is removed, the option should be removed and, based on the normal LNP processing, the LNP trigger should result in a query when the LNP criteria is satisfied (see <REQ-IL-GR-0140V1>).
The default line setting should not over-ride the basic LRN criteria. In other words, when a line is assigned, the default treatment should be that LNP trigger should not result in a query.

For intra-switch groups of lines (i.e., Multi-line Hunt Group, Centrex Groups), the group of lines shall all have the same setting with respect to the unconditional trigger marking since individual members in the group can not port separately.

The table below summarizes the switch operation for both the switch receiving a line and for the switch losing the line. In this table, both of the switches are using this optional line attribute to cause a query even if the line exists on the switch.

	Old Service Provider		New Service Provider	
Cases	Prior to SCP update	After SCP update	Prior to SCP update	After SCP update
Porting the first time	Dialed # returned - terminate on the switch.	LRN returned - route to the new service provider.	Dialed # returned - route to the donor.	Home LRN returned - terminate on this switch.
Previously ported and porting again.	Home LRN returned - terminate on the switch.	New LRN returned - route to new service provider.	Old LRN returned - routed to the old service provider.	Home LRN returned - terminate on this switch.
Previously ported and porting back to donor	Home LRN returned - terminate on the switch.	Dialed # returned - routed to the donor.	Old LRN returned - route to the old service provider.	Dialed # returned - terminate on the switch.

This option allows service providers to complete the hardware actions on the switch while redirecting the call to the recipient switch.
<End of OPT-0890>

<REQ-IL-GR-0900V1>
The switch shall allow default routing for an LNP trigger when the SCP does not respond or the switch cannot interpret the response.
<End of REQ-0900>

<REQ-IL-GR-0910V1>
The switch shall allow provisioning of at least two NPA-NXXs per LATA to designate the LRN of the switch. The Service Provider can designate at least one NPA-NXX to be included in the IAM in the JIP for call originations.

An LRN is needed on a per LATA basis to identify the point of presence for incoming calls to a service provider's network. In addition, a second LRN is required for maintenance purposes (e.g., switch replacement).
<End of REQ-0910>

<REQ-IL-GR-0920V1>
The switch shall allow provisioning of a unique translation type (SS7 SCCP) used for LNP queries.

Committee T1 has assigned a unique translation type value of "11" as the inter-network LNP query type.
<End of REQ-0920>

<REQ-IL-GR-0930V1>
The switch shall allow a "Signal Ported Number" option for signaling the Dialed Number in the Called Party Number instead of the LRN. The option can be specified on an SS7 trunk group basis and the default value is "Signal Ported Number" not specified (in other words, to send the "ported number" GAP and the LRN).
<End of REQ-0930>

<FUT-IL-GR-0950V1>
For each DN served by an LNP Capable switch, it shall be possible to specify the service provider identity of the company serving the DN via service order procedures. This service provider identity shall be provisionable on a per-DN basis.
<End of REQ-0950>

<REQ-IL-GR-0960V1>
A per-trunk group option shall be provided for incoming or two-way trunks to indicate whether or not "connecting network access " AMA records should be written for calls incoming over the trunk group.

This "connecting network access recording" option shall be provisionable to either YES to indicate "connecting network access " AMA records should be generated for all calls incoming over the trunk group; or NO to indicate that "connecting network access " AMA records should not be generated for incoming calls on the trunk group.

This per-trunk group "connecting network access recording" option shall not be applied to Feature Group B or D trunks between a LEC and an IXC; nor shall it apply to Type 1, Type 2A, or Type 2B trunks between a LEC and a Cellular Mobile Carrier (CMC).
<End of REQ-0960>

<REQ-IL-GR-0970V1>
A per-trunk group "billing number" (NPA-NXX-XXXX) must be assigned to any trunk group for which the "connecting network access recording" option is active.

This billing number is provisioned separately from the incoming trunk group service provider information used to populate the JIP at an intermediate switch.
<End of REQ-0970>

<OPT-IL-GR-0980V1>

It is desirable that a per-trunk group option be provided for incoming or two-way trunks to suppress connecting network access AMA records, unless a LNP query is performed for the incoming call and the response from the LNP SCP database meets the criteria in REQ-1130 for generating an LNP module. This "limited recording for connecting network access" option shall be provisionable to either YES if the option is on (i.e. to indicate the record should only be generated when an LNP query is performed for the incoming call with an LRN received in the response to the query); or NO if the option is off (i.e. to indicate record should be generated for all incoming calls on the trunk group).
<End of OPT-0980>

<REQ-IL-GR-0990V1>
For IXC switches, a per-trunk group "LRN" (NPA-NXX-XXXX) shall be assignable to any incoming trunk group which is directly connected to another service provider (i.e. dedicated traffic from one service provider). This per-trunk group "LRN" shall indicate the LRN of the connected switch. This information may be used in AMA recording to identify the service provider of an originating ported DN.
<End of REQ-0990>

<OPT-IL-GR-1010V1>
A per-trunk group "LRN" (NPA-NXX-XXXX) shall be assignable to any incoming trunk group which is connected to another service provider. This per-trunk group "LRN" shall indicate the LRN of the connected switch. This information is used to generate the JIP parameter at an intermediate switch when no JIP is received in the incoming IAM.
<End of OPT-1010>

<OPT-IL-GR-1030V1>
For CAMA switches, a per-trunk group "LRN" (NPA-NXX-XXXX) shall be assignable to any incoming trunk group which is directly connected to another service provider (i.e. dedicated traffic from one service provider). This per-trunk group "LRN" shall indicate the LRN of the connected switch. This information may be used in AMA recording to identify the service provider of an originating ported DN.
<End of OPT-1030>

4.5.2 Measurements

<REQ-IL-GR-1040V1>
The LNP triggering switch will provide measurements for the following:

1) **LNP Query Initiated: the number of calls encountering an LNP trigger that result in an SCP query.**
2) **LNP Query Failures: the number of calls encountering an LNP trigger that result in an SCP query failure.**
3) **LNP Ported Number Calls: the number of LNP query responses containing an LRN (not the dialed number).**
4) **LNP Data Inconsistencies with REL: the number of calls encountering an ISUP REL message with an ANSI cause of 26.**

These measurements are in addition to the existing relevant measurements relating to AIN query activities.
<End of REQ-1040>

<REQ-IL-GR-1050V1>
The terminating switch will provide measurements for the following:

1) **LNP Unallocated Number Calls: the number of calls which encounter an unallocated/vacant number indication in the donor switch following an LNP query in this switch or another switch as indicated by the Translated Called Number indicator in the FCI parameter with no "ported number" GAP.**

2) **LNP Data Inconsistencies: the number of LNP calls encountering an unallocated/vacant indication when the switch's own LRN has been detected after an LNP query in this switch or in another switch as indicated by the Translated Called Number indicator in the FCI parameter and the "ported number" GAP.**

<End of REQ-1050>

Protocol errors detected and reported for LNP triggers and responses will be pegged normally without distinction for the LNP trigger.

4.5.3 Network Management

<REQ-IL-GR-1060V1.04>
For LNP calls, Network Management controls shall be extended to the LRN. This includes controls for the LRN and called number at the intermediate switch contained in the CdPN and "ported number" GAP, respectively.

For calls to a non-ported subscriber, the existing procedures for provisioning and application of the code gapping shall apply at both the end office and intermediate office.

For calls to ported subscribers, the following modifications to the code gapping shall apply:

1. **The existing procedures for provisioning the code gapping shall be used at both the originating switch and intermediate switch.**
2. **Calls to a carrier shall follow the existing procedures at both the originating switch and the intermediate switch. For calls to a ported number using an interexchange carrier, no LNP query is made.**
3. **At an originating switch;**
   - **a 10 digit code gapping shall be applied based on the dialed number and not the LRN.**
   - **a 3 or 6 digit code gapping shall be applied based on the LRN. The LRN is returned in the LNP response for ported numbers.**
4. **At an intermediate switch;**
   - **a 10 digit code gapping shall be applied based on the dialed number and not the LRN. The dialed number will be signaled via the ISUP "ported number" GAP or in the Called Party Number parameter (when the call has not been queried at the previous switch).**
   - **a 3 or 6 digit code gapping shall be applied based on the the LRN. The LRN is signaled via the ISUP Called Party Number parameter or returned in the LNP response for ported numbers.**

<End of REQ-1060>

4.5.4 Billing

4.5.4.1 Overview of Local Number Portability AMA Recording

A flexible AMA module (a.k.a. Bellcore AMA Format Module) will be appended to existing originating call and access charge AMA records for LNP recording. The flexible module will be used to avoid the difficult task of correlating special LNP query records with AMA records for the call. Multiple LNP

modules may be appended to a switch generated AMA record when it is necessary to provide local number portability information for more than one party of a call (e.g. calling party, called party, or alternatively billed third party).

The LNP module will be appended to existing AMA records (e.g. CC04, CC05, CC06, CC110, etc.) generated at an LNP capable switch which performs an LNP query. The LNP module will contain information associated with a ported terminating (called party) as supplied by the LNP SCP database. It is also desirable that a switch serving as an intermediate IXC switch be capable of populating the LNP module information an originating ported DN. The information for an originating ported DN may be obtained from incoming SS7 ISUP signaling (Jurisdiction Information Parameter - JIP), from switch data for a directly connected dedicated trunk group, or from the LNP SCP database. However, the capability for a switch to obtain local number portability information from an LNP SCP database for an originating ported DN to support switch AMA recording is an optional requirement of this document.

Local service providers bill inter-exchange carriers (IC or INC) access charges for calls which transit the local provider's network. A portion of this access charge is based on a distance component commonly known as the "airline mileage element". This element is based on the distance between the V&H of the wire-center serving the calling (originating access) or called (terminating access) party and the V&H of the IC or INC's "point of presence" in the originating or terminating LATA. While a ported user will not be moving out of their rate-center with Service Provider Portability, they may change wire-centers when porting. A wire-center is usually defined as a switch or switch building. Since current LEC back office billing systems derive the wire-center V&H from the NPA-NXX of the calling (originating access) or called (terminating access) number recorded in the switch generated AMA record, additional information will need to be recorded in switch generated AMA records used for access charges to insure that the correct wire-center location is used for users which port their numbers. These Generic Requirements specify the use of the serving exchange's LRN in an appended LNP BAF module on any IC or INC access AMA records for this purpose.

The content of the LNP module, and the rules for generation and population of it, are described in section 4.5.4.2. The LNP module may be generated on any call type (e.g. sent-paid, local measured usage timed, local measured usage untimed, intraLATA Toll, interLATA toll, outWATS, etc.) to a ported DN.

In addition to the LNP module a new AMA Call Code is defined to support "Connecting Network Access" charge recording for calls which cross local network boundaries, but for which existing access charge recording (e.g. CC119 AMA records for terminating IXC access charges) does not apply. This new "Connecting Network Access" Call Code will be used in conjunction with existing AMA Structure Code 625. AMA records that use the new "Connecting Network Access" Call Code will be generated for calls incoming over inter-office trunk groups specifically marked for such recording.

The new "Connecting Network Access" AMA Call Code, and the rules for generation and population of AMA records with this Call Code are provided in section 4.5.4.3.

4.5.4.2 Generation of the Local Number Portability (LNP) Module

<REQ-IL-GR-1070V1.02>
Number portability information may need to be provided by a switch for AMA recording for Local Number Portability. Number portability information consists of: the LRN of the switch serving the DN; the party (originating or terminating) for which the information applies; and the source of the number portability information (LNP SCP database, SS7 ISUP signaling, or switch data). The source of the number portability information will vary depending upon the type of switch recording the information and upon the type of party for which the information is recorded (e.g. originating or terminating DN). The switch recording the number portability information for AMA shall use the following matrix to determine the appropriate source of the information:

LNP Module Party Type	Switch Type	Incoming Trunk Type	Source of LNP Information - in order of preference	Note
Originating DN	IXC or CAMA	SS7	• SS7 ISUP Signaling - IAM JIP • Switch data - incoming trunk group "LRN" if no ISUP JIP received • LNP SCP database when neither switch data nor ISUP JIP available	1 and 2
		Non-SS7 with dedicated traffic from a single service provider	• Switch data • LNP SCP database	1 and 2
		Non-SS7 with traffic from multiple service providers	• LNP SCP database	2
	Originating		• Switch data	1 and 3
	Intermediate switch that performs IC or INC Access Recording	SS7	• SS7 ISUP signaling - IAM JIP • Switch data - incoming "trunk group LRN", if no JIP received	4
		Non-SS7 with dedicated traffic from a single service provider	• Switch data - incoming "trunk group LRN"	4
	Terminating		• Not required	
Terminating DN	Originating, IXC, CAMA, or Intermediate switch that performs an LNP query		• LNP SCP database	7

	Intermediate switch that performs IC or INC Access Recording	**SS7**	• **SS7 ISUP signaling - IAM with a FCI indicating "Translated Number" and a "ported number GAP"** • **LNP SCP database - IAM received without an FCI indicating a "Translated Number"**	**5**
		Non-SS7 with dedicated traffic from an IXC	• **LNP SCP database**	**5**
	Recipient	**SS7 from a dedicated IXC**	• **SS7 ISUP signaling - IAM with a FCI indicating "Translated Number" and containing a "ported number GAP"** • **LNP SCP database - if IAM is received without an FCI indicating a "Translated Number" and if an LNP query is performed by the exchange** • **Switch data - if IAM is received without a FCI indicating a "Translated number" and if an LNP query is not performed by the exchange**	**1 and 6**

		Non-SS7 with dedicated traffic from a single IXC	• **LNP SCP database - if an LNP query is performed by the exchange** • **Switch data - if an LNP query is not performed by the exchange**	**1 and 6**
		SS7 and Non-SS7 without dedicated IXC traffic	• **LNP SCP database - if an LNP query is performed by the exchange** • **Switch data - if an LNP query is not performed by the exchange**	**1**

Note 1: In the future, switch data may contain number portability information such as service provider identity on a per-DN basis. However, initially information will be recorded from switch data only for calls to or from a ported DN for which an IC or INC Access AMA record is generated.

Note 2: The capability for a switch to perform an LNP query to retrieve number portability information for an originating DN is an optional requirement of this document.

Note 3: The originating party's number portability information (e.g. LRN of the originating exchange) will be recorded when an IC or INC Originating Access AMA record is generated for a call from a ported DN

Note 4: The originating party's number portability information (e.g. LRN of the originating exchange) may be recorded when an IC or INC Originating Access AMA record is generated at an intermediate exchange. A Donor switch may function as an intermediate exchange for a call to a ported DN. However, since a Donor switch will not perform Originating Access recording for IC or INC carried calls, this case does not apply to Donor switches.

Note 5: The terminating party's number portability information (e.g. LRN of the terminating exchange) will be recorded when an IC or INC Terminating Access AMA record is generated at an intermediate exchange for a call to a ported DN. Recording of the terminating party's number portability information will occur whether or not the switch making the IC or INC Terminating Access AMA record performs an LNP query.

Note 6: When an IC or INC call is terminated to a ported DN within a directly connected end-office, then the terminating party's number portability information (e.g. LRN of the terminating exchange) will be recorded in an LNP module appended to the IC or INC Terminating Access AMA record generated by the exchange.

Note 7: This case covers calls to a ported DN for which an LNP query is performed at an Originating, IXC, CAMA, or Intermediate switch. An intermediate switch may be a Donor switch for a call to a ported DN which is routed to the Donor switch.

<End of REQ-1070>

The LNP Module definition, along with those of associated BAF tables, has been provided by Bellcore subject matter experts working with representatives from the *Illinois Number Portability Workshop Billing and Rating Subcommittee*. The module definition provided is anticipated to support both service provider portability AMA recording needs, and longer term recording needs for location portability. The LNP BAF module definition is provided in Appendix A to this document.

4.5.4.2.1 General Rules for Appending the LNP Module

This section defines common rules from appending the LNP module to switch generated AMA records. These common rules are not dependent on switch type.

<REQ-IL-GR-1080V1>
The appropriate LNP module shall be appended to an AMA record, if any is made for reasons other than recording the LNP query, for the call involving a ported DN as described in subsequent requirements. If no AMA record is made for the call, then the LNP module data shall not be recorded.
<End of REQ-1080>

<REQ-IL-GR-1090V1>
The switch should not generate an AIN AMA record of structure code 022x, nor an IN record of structure code 0360 or 0364 for an LNP trigger (LNP query). However, if the LNP SCP database response message contains an AIN AMASlpID parameter, then the switch shall follow existing procedures to generate an AIN AMA record of structure code 022x. In this case, if an LNP module is generated for the call, the switch shall append it to AIN Structure Code 022x AMA record.

An AMASlpID is not expected to be returned from a database in response to an LNP query.
<End of REQ-1090>

<REQ-IL-GR-1100V1>
The LNP module shall be appended to the AMA record when ever an LNP trigger is encountered that results in an query to the LNP database. The LNP module shall be populated as follows depending on the contents of the response message from the LNP database:

When an LRN is received in the response message from the LNP SCP database, it shall be included in the LRN field of the LNP module. The Party Identifier should be set to indicate the terminating party, and the Supporting Information to indicate a LRN Source of "LNP Database" with a Query Failure indicator of "No Query Failure". Both the Service Provider Identity and Location field shall be populated as received from the LNP database. If either Service Provider Identity or Location is not received from the LNP database, then these fields shall be filled with "Hexadecimal F" in accordance with BAF fill procedures.

When the switch receives response message from the LNP SCP database containing the original Dialed Number, the LRN field of the LNP module shall be filled with "Hexadecimal F". The Party Identifier should be set to indicate the terminating party, and the Supporting Information to indicate a LRN Source of "LNP Database" with a Query Failure indicator of "No Query Failure". Both the Service Provider Identity and Location field shall be populated with "Hexadecimal F" in accordance with BAF fill procedures.

When the LNP trigger encounters one of the following unusual conditions:

- **the switch receives an AIN Continue or Authorize_Termination message from the LNP SCP database in response to the LNP query,**
- **no response message is received from the LNP SCP database for the LNP query,**